Darwin, Charles

DRAWER 10 C

Abraham Lincoln's Contemporaries

Charles Darwin

Excerpts from newspapers and other sources

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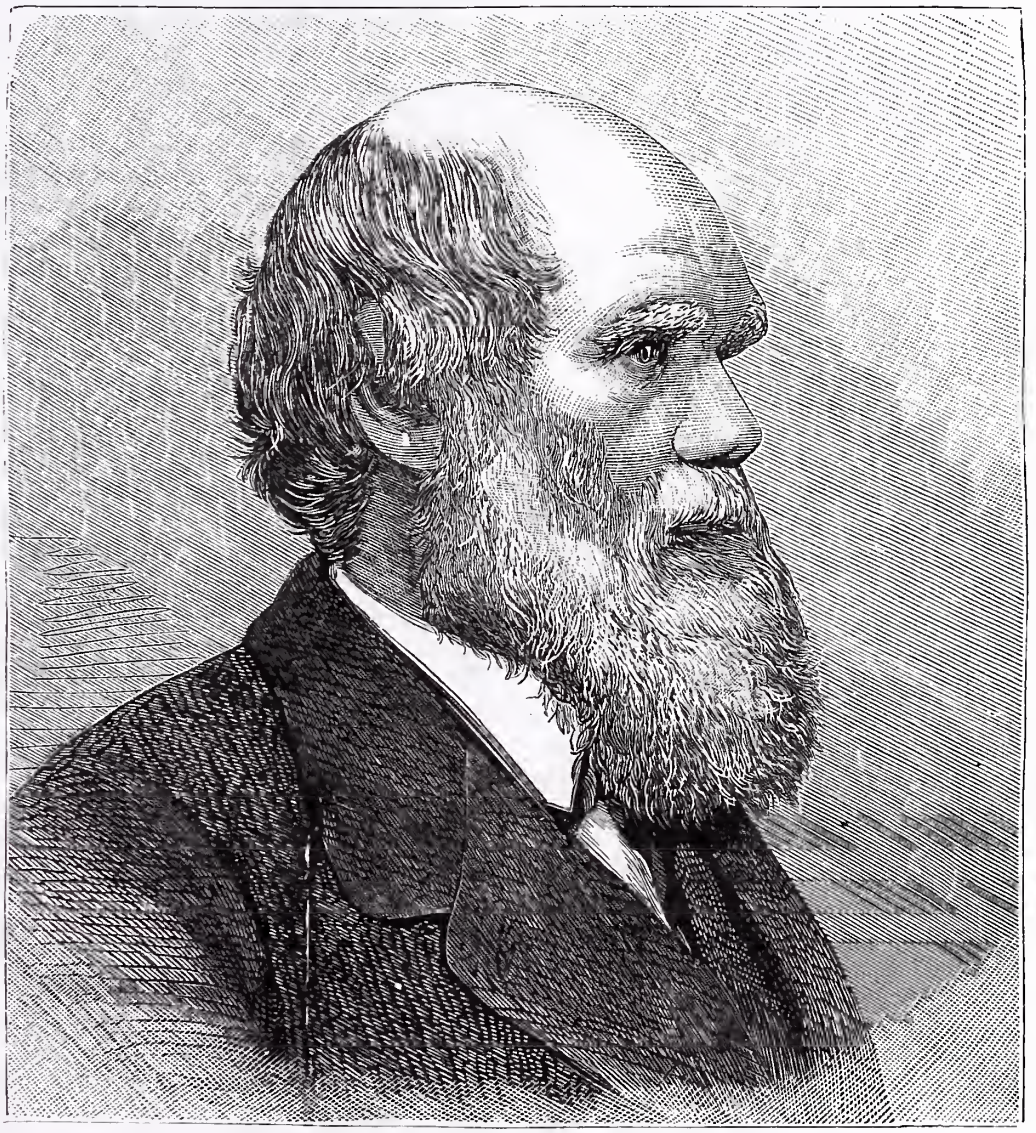
when the sun is warm.

The house was commenced in the Winter and is almost completed by Spring.

To-day is as bright as the one on the eve of her wedding. Her husband comes in, and says he has to go to A— on business, and will be back the next day. He kisses her very tenderly —for a man with coarse, black hair, and large, white teeth. He has of late been troubled by the hollow, tired look of her eyes. He thinks her weakness is half a notion, and he hasn't a very clear comprehension of women, sick or well, yet he loves this frail little wife better than anything on earth, except money.

He is sorry she does not like his plans about Maitland, but he can't give up common-sense for the sake of a woman's



CHARLES ROBERT DARWIN.— SEE PAGE 694.

hope for her trees. She thought he would spare them in the end. She looks toward the orchard where her new house stands in its flaunting, befrilled effrontery. How she hates it! How flaring and purse-proud it looks. Across the hill lies Marsden Manor, with its windows wide open. She wonders at this — can its master be at home? How very sweet, coupled with his name, sounds the word, "master," for is he not in verity her master? Master of her heart, her life? If she had married him, she would have suffered, but he would have spared her home. His persuasive words at their last meeting come back to her like a prophecy.

The sun is piercing the leaves with long sabres of light, as she goes down into the valley. She reaches the spring, and her dog,

the door, "get up. I found Margie in de wood, dun faint, and I waun lay her down on my bed."

The old man arises dazedly, and she lays down her lifeless burden; then, grasping her husband's arm, she pulls him out of the door, and, carefully locking it behind her, says:

"Come 'long wid me, Lemuel. Marse Val dead down in de grove, and I waun yo' ter help me ter carry him 'cross de fiel' to his house."

Lemuel, only half awake, obeys her, wondering whether he is dreaming, or his wife is crazy; but when he reaches that figure in the valley, something of comprehension dawns upon him, and his heart grows numb with horror.

"My God! Dinah," he cries, "what do dis mean?"

And she answers, "Lemuel, doan' ax no questions now, but take up dis boy and help me tak' him to his house, an' I will tell yo' all I know afterward."

He dumbly obeys her, and together they carry the lifeless body across the fields where his feet have flown in childhood.

When they reach his unoccupied house, Dinah guides her husband to an open window, and through it they take the mansion's silent master.

They lay him upon his bed as they found him in the grove, and leave him to his God! Ah, surely some part of him found its way to heaven, for the face and the mind and the voice were heaven-born.

As Dinah and her husband go home, she tells him all she can comprehend of the sad story, and their secret is kept faithfully.

When they reach their door, a storm has arisen. The great trees are bending 'neath wind and rain, and the lightning is tearing the sky with lances of flame; there is a fearful report, and the whole orchard looks like one flame of fire; then comes a cry of fire, and they rush toward the light, and find the new house robed in flames. The crowd is trying to save it, but there are no fire-engines in the village, and if there were there would be little hope, for the whole house is one burning mass.

The old man and woman stand silently together and watch this devastation with exulting hearts.

The negro is a born aristocrat—a lover of old places and traditions—an echo of his one-time master even in these anti-slavery days.

These two black people have silently sympathized with their mistress in her suffering about her home, for they understood and felt it all. They feel now as though they could cry out in exultation as they stand watching the fire with beaming eyes. After a while Dinah, touching her husband's arm, whispers, "We must go back to her."

When they enter the cabin the old soul goes to the bed and lifts the cold body in her arms to the window facing the east. She raises the white face where the red light can fall upon it, and then says, as she closes the waxen lids for ever: "Poor baby! I couldn't let her go to dust without showing her those flames."

DARWIN.

In the north aisle of the nave of Westminster Abbey, a few feet from the grave of Sir Isaac Newton, is the tablet stone bearing the inscription, "Charles Robert Darwin. Born 12th February, 1809. Died 19th April, 1882."

As in this place of honored rest, so in the history of science do the names of Newton and Darwin stand henceforth side by side. The publication of the "Origin of Species" marked an epoch in human thought; and its illustrious author not only saw his genius recognized and his theories generally accepted, but he also outlived the storm of hostile criticism and abuse which assailed him before the real import of his work was understood, or the beauty of his character appreciated. Darwin's life and letters, edited with reverential care by his son, Francis Darwin, have been lately given to the world. They at once take a high place among the classics of English biography, or autobiography, as it might almost be said, for the great naturalist is allowed, to a considerable extent, to tell his own story; and they clearly reveal the man described by those who knew him best as "one of the most genial, warm-hearted, generous and affectionate of friends; one whose sympathies were with all that was good and true, and who had a cordial hatred for everything that was false, or vile, or cruel, or mean, or dishonorable." He was not only great, but pre-eminently good and just and lovable.

Charles Darwin was descended from an old Yorkshire family, various members of which won moderate distinction in their times. His great-grandfather, Robert Darwin, is the first one to whom a taste for science is ascribed. In Erasmus Darwin, son of the latter, the philosophic and intellectual tastes were strongly marked, in addition to a considerable talent for poetry. The father of our great naturalist, Robert Waring Darwin, son of Erasmus, entered the medical profession, and took his M. D. at Leyden in 1785, settled at Shrewsbury before he was twenty-one years old, and at once built up a profitable practice. In 1796 he married Susannah Wedgwood, a gentle, sympathetic woman, with "a remarkably sweet and pretty face," then in her thirty-second year. Dr. Darwin is described by his illustrious son as a remarkably tall, broad and corpulent man, weighing over twenty-four stone. "His chief mental characteristics were his powers of observation and his sympathy." There is an excellent story of his early practice, which he related to his son as "an odd little specimen of human nature." When a very young man, he was called in to consult with the family physician in the case of a gentleman of much distinction in Shropshire. The old doctor told the wife that the illness was of such a nature that it must end fatally. Dr. Darwin took a different view, and maintained that the gentleman would recover. He died, nevertheless. An autopsy proved the young doctor to have been quite wrong in all respects, and he acknowledged his error. Naturally, he never expected to be consulted again by this family; but a few months later the widow sent for him, having dismissed the old family doctor. Greatly surprised, he asked a friend of the widow to find out how he had come to be consulted. The widow answered the friend that "she would never again see the odious old doctor who said from the first that her husband would die, while Dr. Darwin always maintained that he would recover!"

Charles Robert, the subject of our sketch, was the fifth of Dr. Darwin's six children. He was born at the "Mount" homestead, Shrewsbury, on February 12th, 1809. In the autobiographical sketch, headed "Recollections of the Development of my Mind and Character," which the naturalist wrote for his own children in 1876, we have a complete and invaluable series of pictures of his childhood, youth, manhood and mature age, with the

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impressions and work of each period, all simply yet vividly drawn, and full of interesting detail. Upon this record may most properly be based the narrative or review of that long and fruitful life.

"My earliest recollection," he says, "goes back only to when I was a few months over four years old, when we went to near Abergele for sea-bathing; and I recollect some events and places there with some little distinctness. My mother died in July, 1817, when I was a little over eight years old, and it is odd that I can remember scarcely anything about her except her deathbed, her black velvet gown, and her curiously constructed work-table." In this same year he was sent to a day-school in Shrewsbury, where his taste for natural history, and more especially for collecting, was well developed. "I tried to make out the names of plants, and collected all sorts of things—shells, seals, franks, coins and minerals. The passion for collecting which leads a man to be a systematic naturalist, a *virtuoso*, or a miser, was very strong in me, and was clearly innate, as none of my sisters or brothers ever had this taste."

In the Summer of 1818, young Darwin went to Dr. Butler's great school in Shrewsbury, where he remained for seven years—till midsummer, 1825—when he was sixteen years old. Nothing, he declares, could have been worse for the development of his mind than this school, which was strictly classical, nothing else being taught, except a little ancient geography and history. "The school, as a means of education to me, was simply a blank. During my whole life I have been singularly incapable of mastering any language. Especial attention was paid to verse-making, and this I could never do well. I had many friends, and got together a good collection of old verses, which, by patching together, sometimes aided by other boys, I could work into any subject. Much attention was paid to learning by heart the lessons of the previous day; this I could effect with great facility, learning forty or fifty lines of Virgil or Homer, whilst I was in morning chapel; but this exercise was utterly useless, for every verse was forgotten in forty-eight hours. I was not idle, and, with the exception of versification, generally worked conscientiously at my classics, not using cribs. The sole pleasure I ever received from such studies was from some of the odes of Horace, which I admired greatly. When I left the school I was, for my age, neither high nor low in it, and I believe that I was considered by all my masters and by my father as a very ordinary boy, rather below the common standard in intellect. To my deep mortification my father once said to me, 'You care for nothing but shooting dogs and rat-catching, and you will be a disgrace to yourself and all your family.' But my father, who was the kindest man I ever knew, and whose memory I love with all my heart, must have been angry and somewhat unjust when he used such words.

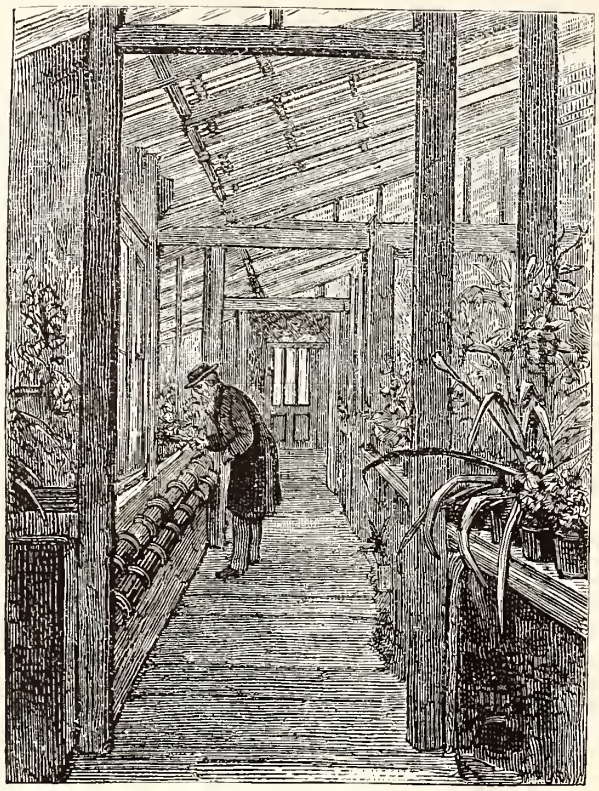
"Looking back as well as I can at my character during my school-life, the only qualities which at this period promised well for the future were, that I had strong and diversified tastes, much zeal for whatever interested me, and a keen pleasure in understanding any complex subject or thing. I was taught Euclid by a private tutor, and I distinctly remember the intense satisfaction which the clear geometrical proofs gave me. I remember, with equal distinctness, the delight which my uncle (the father of Francis Galton) gave me by explaining the principle of the vernier of a barometer. With respect to diversified tastes, independently of science, I was fond of reading various books, and I used to sit for hours reading the historical plays of Shakespeare, generally in an old window in the thick walls of the school. I read also other poetry, such as Thomson's 'Seasons' and the recently published poems of Byron and Scott. I mention this because later in life I wholly lost, to my regret, all pleasure from poetry of any kind, including Shakespeare. In connection with pleasure from poetry, I may add that in 1822 a vivid delight in scenery was first awakened in my mind, during a riding tour on the borders of Wales, and this has lasted longer than any other æsthetic pleasure.

"Early in my school-days a boy had a copy of the "Wonders of the World," which I often read, and disputed with other boys about the veracity of some of the statements; and I believe that this book first gave me a wish to travel in remote countries, which was ultimately fulfilled by the voyage of the *Beagle*. In the latter part of my school-life I became passionately fond of shooting; I do not believe that any one could have shown more zeal for the most holy cause than I did for shooting birds. How well I remember killing my first snipe, and my excitement was so great that I had much difficulty in reloading my gun, from the trembling of my hands. This taste long continued, and I became a very good shot.

"With respect to science, I continued collecting minerals with much zeal, but quite unscientifically, all that I cared about was a new-named mineral, and I scarcely attempted to classify them. I must have observed insects with some little care, for when ten years old (1819) I went for three weeks to Plas Edwards on the seacoast in Wales, I was very much interested and surprised at seeing a large black-and-scarlet Hemipterous insect, many moths (Zygæna), and a Cicindela, which are not found in Shropshire. I almost made up my mind to begin collecting all the insects which I could find dead, for on consulting my sister I concluded that it was not right to kill insects for the sake of making a collection. From reading White's 'Selborne,' I took much pleasure in watching the habits of birds, and even made notes on the subject. In my simplicity I remember wondering why every gentleman did not become an ornithologist. Toward the close of my school-life, my brother worked hard at chemistry, and made a fair laboratory with proper apparatus in the tool-house in the garden, and I was allowed to aid him as a servant in most of his experiments. The fact that we worked at chemistry somehow got known at school, and, as it was an unprecedented fact, I was nicknamed 'Gas.'"

In October, 1825, Dr. Darwin sent his two boys to Edinburgh University, where they remained one and two years, or sessions, respectively. Erasmus, the elder, was completing his medical studies, while Charles was beginning his. The future naturalist confesses that the belief that his father would leave him property enough to subsist on with comfort was sufficient to check any strenuous efforts to learn medicine. "Dr. Duncan's lectures on Materia Medica, at eight o'clock on a Winter's morning are something fearful to remember. Dr.——— made his lectures on human anatomy as dull as he was himself, and the subject disgusted me." Charles also attended regularly the clinical wards of the hospital, but this part of his course interested him no more than the others. "It has proved one of the greatest evils in my life," he confesses, "that I was not urged to practice dissection, for I should soon have got over my disgust; and the practice would have been invaluable for all my future work. This has been an irremediable evil, as well as my incapacity to draw."

In his second year at Edinburgh, young Darwin became well acquainted with several young men who were



DARWIN'S GREENHOUSE.

fond of natural science, and with Drs. Grant and Coldstream, the former of whom he often accompanied on excursions to collect marine zoological specimens, which he dissected as well as he could with the aid of a wretched little microscope. One day, Dr. Grant warmly eulogized Lamarck and his views on evolution, to which his young companion listened in silent astonishment. "I had previously," says Darwin, "read the 'Zoonomia' of my grandfather, in which similar views are maintained, but without producing any effect upon me. Nevertheless, it is probable that the hearing early in life such views maintained and praised may have favored my upholding them under a different form in my 'Origin of Species.'" While at Edinburgh, in 1826, the future naturalist read two short scientific papers before the University Plinian Society. He attended the meetings of the Royal Medical Society, of which he was also a member; but as the subjects were exclusively medical, he cared little about them. The Summer vacations of these two years were spent in pedestrian and riding tours, and the Autumns in shooting.

After two sessions in Edinburgh, Dr. Darwin became convinced that his son Charles was not in a fair way to distinguish himself as a physician, so he proposed that he should become a clergyman. The youth himself had no objection to becoming a country clergyman, provided he could bring himself to believe in all the dogmas of the Church of England. Accordingly he read with care, "Pearson on the Creeds," and a few other books on divinity; and having, at that period, no doubt whatever in the strict and literal truth of every word in the Bible, young Darwin easily persuaded himself that the creed must be fully accepted.

"Considering how fiercely I have been attacked by the orthodox," he wrote, half a century afterward, "it seems ludicrous that I once intended to be a clergyman. Nor was this intention and my father's wish ever formally given up, but died a natural death when, on leaving Cambridge, I joined the *Beagle* as a naturalist. . . . During the three years which I spent at Cambridge, my time was wasted, as far as academical studies were concerned, as completely as at Edinburgh and at school. I have deeply regretted that I did not proceed far enough, at least, to understand something of the great leading principles of mathematics, for men thus endowed seem to have an extra sense. But I do not believe that I should ever have succeeded beyond a very low grade. With respect to classics, I did nothing except attend a few compulsory college lectures, and the attendance was almost nominal. In my second year I had to work for a month or two to pass the Little-Go, which I did easily. Again, in my last year, I worked with some earnestness for my final degree of B.A., and brushed up my classics, together with a little algebra and Euclid, which latter gave me much pleasure, as it did at school. In order to pass the B.A. examination, it was also necessary to get up Paley's 'Evidences of Christianity,' and his 'Moral Philosophy.' This was done in a thorough manner, and I am convinced that I could have written out the whole of the 'Evidences' with perfect correctness, but not, of course, in the clear language of Paley. The logic of this book, and, as I may add, of his 'Natural Theology,' gave me as much delight as did Euclid. The careful study of these works, without attempting to learn any part by rote, was the only part of the academical course which, as I then felt, and as I still believe, was of the least use to me in the education of my mind. I did not at that time trouble myself about Paley's premises; and, taking these on trust, I was charmed and convinced by the long line of argumentation."

Darwin, however, insists that, although there were "some redeeming features" in his life at Cambridge, his time was sadly wasted there. "From my passion for shooting and for hunting, and, when this failed, for riding across country, I got into a sporting set, including some dissipated, low-minded young men. We used often to dine together in the evening—though these dinners often included men of a higher stamp—and we sometimes drank too much, with jolly singing and playing at cards afterward. I know that I ought to feel ashamed of days and evenings thus spent; but as some of my friends were very pleasant, and we were all in the highest spirits, I cannot help looking back to these times with much pleasure."

He, also, got into a musical set, and actually acquired a taste for music—so much so that, to use his own physiological description of his sensations, the anthem in King's College Chapel would sometimes "cause his backbone to shiver." And yet he was so utterly destitute of "an ear," that he could not distinguish between harmony and discord, nor hum the simplest tune correctly. "My musical friends soon perceived my state, and sometimes amused themselves by making me pass an examination, which consisted in ascertaining how many tunes I could recognize when they were played rather more quickly or slowly than usual. 'God Save the King,' when thus played, was a sore puzzle. There was another man with almost as bad an ear as I had, and, strange to say, he played a little on the flute. Once I had the triumph of beating him in one of our musical examinations."

Darwin's passion and persistent pursuit at Cambridge, however, was beetle-collecting. He was indefatigable, and secured some very rare species.

No poet ever felt more delight at seeing his first lines in print, than did he at seeing, in Stephens's "Illustrations of British Insects," the magic words, "Captured by

C. Darwin, Esq." He was introduced to entomology by his second cousin, W. Darwin Fox, then at Christ's College, and with whom he became extremely intimate. Another Cambridge friendship which influenced his whole career, was that with Professor Henslow, who was versed in many branches of science, and kept open house for undergraduates and older members of the university, who had similar tastes. Darwin almost daily took long walks with him, so that he came to be known as "the man who walks with Henslow."

After passing his final examination, at the Commencement of 1831, he was enabled—through the influence of Henslow, who had also initiated him into the study of geology—to accompany Professor Sedgwick on a tour of geological investigation through North Wales. He returned to Shrewsbury in time for the shooting season; for, as he says, "at that time I should have thought myself mad to give up the first days of partridge-shooting for geology or any other science."

It was on his return home from this tour that young Darwin found awaiting him a letter from his friend Henslow, setting forth a proposition upon which the young man's entire career was destined to turn. It was to the effect that Captain Fitz-Roy, of the ship *Beagle*, commissioned by the Government to survey the southern extremity of the South American Continent, was willing to give up part of his own cabin to any young man who would volunteer to go with him, without pay, as naturalist for the voyage; and Henslow, as it appeared, had the appointment, or, at least, recommendation, of this naturalist-companion. He promptly offered to present Darwin for the place. Darwin was, of course, eager to accept this offer, but his father was equally strong in his objection to the project. It would be "disreputable" to his after career as a clergyman; it was a "wild scheme"; the place must have been offered to and refused by others before the chance was given to young Darwin; the young man would never settle down to a steady life, after such a voyage; "the accommodations on the ship would be most uncomfortable; it would be again changing his profession, etc. Nevertheless, Dr. Darwin wound up his long list of objections by saying to his son: "If you can find any man of common sense who advises you to go, I will give my consent."

By a happy inspiration the young naturalist thought of his maternal uncle, Josiah Wedgwood, of Maer, who came gallantly to the rescue, and answered the objections categorically, to such good effect that the elder Darwin changed his mind, and told Charles he might go, with his blessing. The hopeful youth, who had been rather extravagant at Cambridge, said, by way of consoling his father:

"I shall have to be deuced clever to spend more than my allowance while on board the *Beagle*."

"But they tell me you are very clever," answered the father, with a smile.

"Next day," says Darwin, "I started for Cambridge to see Henslow, and thence to London to see Fitz-Roy, and all was soon arranged. Afterward, on becoming very intimate with Fitz-Roy, I heard that I had run a very narrow risk of being rejected, on account of the shape of my nose! He was an ardent disciple of Lavater, and was convinced that he could judge of a man's character by the outline of his features; and he doubted whether any one with my nose could possess sufficient energy and determination for the voyage. But I think he was afterward well satisfied that my nose had spoken falsely."

The *Beagle* was a well-built little vessel, of 235 tons, rigged as a bark, and carrying six guns. She belonged to the old class of ten-gun brigs, which were nicknamed "coffins," from their liability to go down in severe weather. Nevertheless, she lived through the five years' work, in the most stormy regions in the world, under Commanders Stokes and Fitz-Roy, without a serious accident. "Everybody who can judge," wrote Darwin from Devonport, November 17th, 1831, "says it is one of the grandest voyages that has almost ever been sent out. Everything is on a grand scale. Twenty-four chronometers!" A narrow space at the end of the chart-table, in the drawing-cabin, was his only accommodation for working, dressing and sleeping; though he also had the run of the captain's quarters. The hammock was left hanging overhead all day, when the sea was rough, that he might lie on it with a book in his hand when he could not any longer sit at the table. For specimens he had a very small cabin under the forecastle.

The crew of the *Beagle* consisted of Captain Fitz-Roy, "commander snd surveyor"; two lieutenants, one of whom (the first-lieutenant) was the late Captain Wickham, Governor of Queensland; the present Admiral Sir James Sullivan, K. C. B., was the second-lieutenant. Besides the master and two mates, there were an assistant-surveyor, a surgeon, assistant-surgeon, two midshipmen, master's mate, a volunteer (1st class), purser, carpenter, clerk, boatswain, eight marines, thirty-four seamen and six boys. The object of the voyage was, briefly, to complete the survey of Patagonia and Terra del Fuego, commenced under Captain King in 1826 to 1830; to survey the shores of Chili, Peru, and some islands in the Pacific; and, returning by the Indian Archipelago to England, to carry a chain of chronometrical measurements round the world.

The youthful Captain Fitz-Roy (a nephew of the Duke of Grafton) was a strict officer and an admirable seaman. He made himself thoroughly respected both by officers and men. He was a very young commander, being only twenty-three or twenty-four years old at the time of the *Beagle's* setting out in December, 1831. He and Darwin

DARWIN'S USUAL WALK.

appear to have been pleased with one another from the first; and the young naturalist formed many warm and lasting friendships on shipboard. He ever afterward spoke of the officers as a fine, determined set of men, and especially of Wickham, the first-lieutenant, as a "glorious fellow." The latter, being responsible for the neatness and general appearance of the ship, strongly objected to the "Fly-catcher's" littering the decks, and spoke of his specimens as "beastly devilment," adding, "If I were skipper, I would soon have you and all your mess out of the place."

It was on December 27th, 1831, that the *Beagle* finally left Plymouth for her circumnavigation of the world, after having been twice driven back by heavy gales. A detailed description of the events and work of the voyage has been given to the world in Darwin's own well-known "Journal of Researches." The voyage was, as he says, by far the most important event in his life, and determined his whole career. He always felt that he owed to it the first real training or education of his mind. He was led to attend closely to several branches of natural history, and thus his powers of observation, always alert, were strengthened and improved. "The investigation of the geology of all the places visited was far more important, as reasoning here comes into play. On first examining a new district, nothing can appear more hopeless than the chaos of rocks; but by recording the stratification and nature of the rocks and fossils at many points, always reasoning and predicting what will be found elsewhere, light soon begins to dawn on the district, and the structure of the whole becomes more or less intelligible. I had brought with me the first volume of Lyell's 'Principles of Geology,' which I studied attentively; and the book was of the highest service to me in many ways. The very first place which I examined, namely, St. Jago, in the Cape de Verde Islands, showed me clearly the wonderful superiority of Lyell's manner of treating geology, compared with that of any other author whose works I had with me or ever afterward read. . . . The geology of St. Jago is very striking, yet simple: a stream of lava formerly flowed over the bed of the sea, formed of triturated recent shells and corals, which it has baked into a hard white rock. Since then the whole island has been upheaved. But the line of white rock revealed to me a new and important fact, namely, that there had been afterward subsidence round the craters which had since been in action, and had poured forth lava. It then first dawned upon me that I might perhaps write a book on the geology of the various countries visited, and this made me thrill with delight. That was a memorable hour to me, and how distinctly I can call to mind the low cliff of lava beneath which I rested, with the sun glaring hot, a few strange desert plants growing near, and with living corals in the tidal pools at my feet. Later in the voyage, Fitz-Roy asked me to read some of my Journal, and declared it would be worth publishing; so here was a second book in prospect!"

Besides his geological work, Darwin industriously collected animals of all classes, briefly describing and roughly dissecting many of the marine ones; but as he was not much of an anatomist, and no artist at all, the mass of MS. which he thus laboriously accumulated was practically worthless; though he acquired some knowledge of the Crustaceans, which served him in after years in his Cirripedia monograph. During some part of each day he wrote up his Journal, taking pains to describe careful and vividly all that he had seen—a most excellent practice. The Journal was also utilized for letters home, portions of it being sent to England whenever opportunity offered. More important than these special studies was the habit of energetic industry and concentrated attention to whatever he might be engaged in, which the young naturalist acquired on board the *Beagle*. "Everything about which I thought or read," he tells us, "was made to bear directly upon what I had seen or was likely to see; and this habit of mind was continued during the five years of the voyage. I feel sure that it was this training which has enabled me to do whatever I have done in science."

The zeal and energy thus developed by Darwin during the voyage were the more admirable, from the fact that he was, during the whole time, a martyr to seasickness. Admiral Lord Stokes, writing of his old friend and shipmate, to the London *Times* in April, 1883, said: "Perhaps no one can better testify to his early and most trying labors than myself. We worked together for several years at the same table in the poop-cabin of the *Beagle* during her celebrated voyage, he with his microscope and myself at the charts. It was often a very lively end of the little craft, and distressingly so to my old friend, who suffered greatly from sea-sickness. After perhaps an hour's work, he would say to me, 'Old fellow, I must take the horizontal for it,' that being the best relief position from ship motion; a stretch out on one side of the table for some time would enable him to resume his labors for a while, when he had again to lie down. It was distressing to witness this early sacrifice of Mr. Darwin's health, who ever afterward seriously felt the effects of the *Beagle's* voyage." Nevertheless, the amount of work that he got through in those years shows that he must have been in full vigor the greater part of the time; though he had at least one severe illness, in South America, when he was received into the house of an Englishman, and tended with careful kindness.

Of course there were disputes and "rows" to give a somewhat disagreeable spice to life on shipboard. Captain Fitz-Roy's temper, as the genial philosopher himself says, "was a most unfortunate one. It was usually worst in the early morning, and with his eagle eye he could generally detect something amiss about the ship, and was then unsparing in his blame. He was very kind to me, but was a man very difficult to live with on the intimate terms which necessarily followed from our messing by ourselves in the same cabin. We had several quarrels. For instance, early in the voyage, at Bahia, in Brazil, he defended and praised slavery, which I abominated, and told me that he had just visited a great slave-owner, who had called up many of his slaves and asked them whether they were happy, and whether they wished to be free, and all answered 'No.' I then asked him, perhaps with a sneer, whether he thought that the answer of slaves in the presence of their master was worth anything? This made him excessively angry, and he said that as I doubted his word, we could not live any longer together. I thought that I should have been compelled to leave the ship; but as soon as the news spread, which it did quickly, as the captain sent for the first-lieutenant to assuage his anger by abusing me, I was deeply gratified by receiving an invitation from all the gun-room officers to mess with them. But after a few hours Fitz-Roy showed his usual magnanimity by sending an officer to me with an apology and a request that I would continue to live with him. His character was in several respects one of the most noble which I have ever known."

But there were delights and wonders to more than offset the little *désagréments* of the voyage. The glories of the tropical vegetation rose before Darwin's imagination

through all the after years ; and the sense of sublimity which the great deserts of Patagonia and the forest-clad mountains of Terra del Fuego excited in him left an indelible impression upon his mind. "The sight of a naked savage in his native land is an event which can never be forgotten. Many of my excursions on horseback through wild countries, or in the boats, some of which lasted several weeks, were deeply interesting ; their discomfort and some degree of danger were at that time scarcely a drawback, and none at all afterward. I also reflect with high satisfaction on some of my scientific work, such as solving the problem of coral islands, and making out the geological structure of certain islands —for instance, St. Helena. Nor must I pass over the discovery of the singular relations of the animals and plants inhabiting the several islands of the Galapagos Archipelago, and of all of them to the inhabitants of South America."

Toward the close of the voyage, Darwin received, at Ascension, a letter which thrilled him with pride and ambition, causing him to clamber over the mountains with a more bounding step than ever, and to make the rocks resound under his geological hammer. The letter was from his sisters, and told how Sedgwick had called upon the elder Darwin, and told him that his son would take a place among the leading scientific men. It appeared that Henslow had printed and read before the Philosophical Society of Cambridge some of the private letters written to him by the young naturalist, and had brought the latter's collection of fossil bones, forwarded to him in England, to the attention of palæontologists.

When Darwin returned to England, in October, 1836, his father, who was far from being a believer in phrenology, exclaimed, upon first seeing him : "Why, the shape of his head is quite altered !"

During the next two years he worked upon, and finished, his "Journal of Travels," read several papers before the Geological Society, began preparing the MS. for his "Geological Observations," and arranged for the publication of the "Zoology of the Voyage of the *Beagle*." In July, 1837, he opened his first notebook for facts in relation to the Origin of Species, which he had long meditated, and "never ceased working for the next twenty years." During these two years he read a good deal on various subjects, including some metaphysical books ; but he found his mind unsuited to the latter study. During the voyage of the *Beagle*, Milton's "Paradise Lost" had been his favorite volume ; now, he took delight in the poetry of Wordsworth and Coleridge, and could even boast of having read "The Excursion" twice through.

In January, 1839, Darwin was married to his cousin, Emma Wedgwood, and the young pair began their married life in a small, commonplace London house, No. 12 Upper Gower Street, whose only redeeming feature was a strip of garden in front. Darwin describes, in a letter, the "extreme quietness" of his life here : "We have given up all parties, for they agree with neither of us, and if one is quiet in London, there is nothing like its quietness—there is a grandeur about its smoky fogs, and the dull, distant sounds of cabs and coaches. In fact, you may perceive I am becoming a thorough-paced cockney."

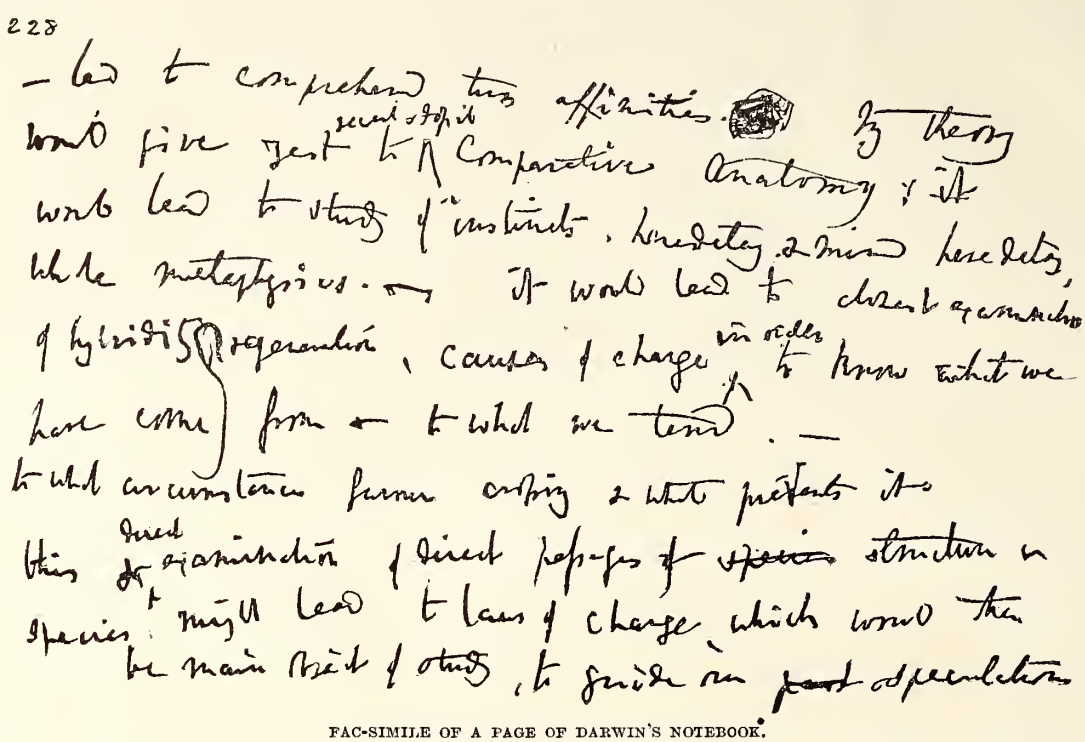
At the end of 1839 his eldest child was born, and it was then that he began his observations ultimately published in the "Expression of the Emotions." His book on this subject, and the short paper published in *Mind*, show how closely he observed his child. He seems to have been surprised at his own feelings for a young baby, for he wrote to his friend Fox, July, 1840): "He (*i. e.*, the baby) is so charming that I cannot pretend to any modesty. I defy anybody to flatter us on our baby, for I defy any one to say anything in its praise of which we are not fully conscious. . . . I had not the smallest conception there was so much in a five-month baby. You will perceive by this that I have a fine degree of paternal fervor."

During these years he worked intermittently at "Coral Reefs," being constantly interrupted by ill health. Thus he speaks of "recommencing" the subject in February, 1839, and again in the October of the same year, and once more in July, 1841, "after more than thirteen months' interval." It was finally sent to the printers in January, 1842, and the last proof corrected in May.

In September, 1842, Darwin left London with his family, and settled in the quiet, out-of-the-way little Kentish village of Down, where the remaining forty years of his life were spent, where his children were reared, and where his life-work was accomplished. His residence, which was called Down House, stood a quarter of a mile outside of the village. When he took possession, it was an unattractive brick building of three stories, covered with shabby whitewash and hanging tiles. Eighteen acres of land, partly wooded, were sold with the house, which was gradually improved into what visitors of late years have described as "essentially a gentleman's residence." Writing, in his autobiographical sketch (1876), of his life at Down, Darwin says : "I was pleased with the diversified appearance of vegetation proper to a chalk district, and so unlike what I had been accustomed to in the Midland counties ; and still more pleased with the extreme quietness and rusticity of the place. It is not, however, quite so retired a place as a writer in a German periodical makes it, who says that my house can be approached only by a mule-track ! Few persons can have lived a more retired life than we have done. Besides short visits to the houses of relations, and occasionally to the seaside or elsewhere, we have gone nowhere. During the first part of our residence we went a little into society, and received a few friends here ; but my health almost always suffered from the excitement, violent shivering and vomiting attacks being thus brought on. I have therefore been compelled for many years to give up all dinner-parties ; and this has been somewhat of a deprivation to me, as such parties always put me into high spirits. From the same cause I have been able to invite here very few scientific acquaintances. My chief enjoyment and sole employment throughout life has been scientific work ; and the excitement from such work makes me for the time forget, or drives quite away, my daily discomfort. I have therefore nothing to record during the rest of my life, except the publication of my several books."

An abstract of Darwin's review of his chief works, which possesses unique interest, may appropriately be given here : "In the early part of 1844, my observations on the volcanic islands visited during the voyage of the *Beagle* were published. In 1845, I took much pains in correcting a new edition of my 'Journal of Researches,' which was originally published in 1839 as part of Fitz-Roy's work. The success of this, my first literary child, always tickles my vanity more than that of any of my other books. Even to this day it sells steadily in England and the United States, and has been translated for the second time into German, and into French and other languages.

"In 1846, my 'Geological Observations on South America' were published. I record in a little diary, which I



FAC-SIMILE OF A PAGE OF DARWIN'S NOTEBOOK.

have always kept, that my three geological books ('Coral Reefs' included) consumed four and a half years' steady work; 'and now it is ten years since my return to England. How much time have I lost by illness?'

"In October, 1846, I began to work on 'Cirripedia.' Although I was employed during eight years on this work, yet I record in my diary that about two years out of this time were lost by illness. On this account I went in 1848 for some months to Malvern for hydropathic treatment, which did me much good, so that on my return home I was able to resume work. So much was I out of health, that when my dear father died, on November 13th, 1848, I was unable to attend his funeral or to act as one of his executors.

"My work on the 'Cirripedia' possesses, I think, considerable value, as, besides describing several new and remarkable forms, I made out the homologies of the various parts—I discovered the cementing apparatus, though I blundered dreadfully about the cement glands—and, lastly, I proved the existence in certain genera of minute males complemental to and parasitic on the hermaphrodites. This latter discovery has at last been fully confirmed.

"From September, 1854, I devoted my whole time to arranging my huge pile of notes, to observing, and to experimenting in relation to the transmutation of species. During the voyage of the *Beagle* I had been deeply impressed by discovering in the Pampean formation great fossil animals covered with armor like that on the existing armadillos; secondly, by the manner in which closely allied animals replace one another in proceeding southward over the continent; and thirdly, by the South American character of most of the productions of the Galapagos Archipelago, and more especially by the manner in which they differ slightly on each island of the group; none of the islands appearing to be very ancient in a geological sense.

"It was evident that such facts as these, as well as many others, could only be explained on the supposition that species gradually become modified, and the subject haunted me. But it was equally evident that neither the action of the surrounding conditions, nor the will of the organisms (especially in the case of plants) could account for the innumerable cases in which organisms of every kind are beautifully adapted to their habits of life—for instance, a woodpecker or a tree-frog to climb trees, or a seed for dispersal by hooks or plumes. I had always been much struck by such adaptations, and until these could be explained it seemed to me almost useless to endeavor to prove by indirect evidence that species have been modified.

"After my return to England it appeared to me that by following the example of Lyell in Geology, and by collecting all facts which bore in any way on the variation of animals and plants under domestication and nature, some light might, perhaps, be thrown on the whole subject. My first notebook was opened in July, 1837. I worked on true Baconian principles, and, without any theory, collected facts on a wholesale scale, more especially with respect to domesticated productions, by printed inquiries, by conversation with skillful breeders and gardeners, and by extensive reading. When I see the list of books of all kinds which I read and abstracted, including whole series of journals and transactions, I am surprised at my industry. I soon perceived that selection was the keystone of man's success in making useful races of animals and plants. But how selection could be applied to organisms living in a state of nature remained for some time a mystery to me.

"In October, 1838—that is, fifteen months after I had begun my systematic inquiry—I happened to read for amusement 'Malthus on Population,' and, being well prepared to appreciate the struggle for existence which everywhere goes on from long-continued observation of the habits of animals and plants, it at once struck me that, under these circumstances, favorable variations would tend to be preserved, and unfavorable ones to be destroyed. The result of this would be the formation of new species. Here, then, I had at last got a theory by which to work, but I was so anxious to avoid prejudice, that I determined not for some time to write even the briefest sketch of it.

"In June, 1842, I first allowed myself the satisfaction of writing a very brief abstract of my theory in pencil in thirty-five pages, and this was enlarged during the Summer of 1844 into one of two hundred and thirty pages, which I had fairly copied out and still possess.

"But at that time I overlooked one problem of great importance, and it is astonishing to me, except on the principle of Columbus and his egg, how I could have overlooked it and its solution. This problem is the tendency in organic beings descended from the same stock to diverge in character as they become modified. That they have diverged greatly is obvious from the manner in which species of all kinds can be classed under genera, genera under families, families under sub-orders and so forth; and I can remember the very spot in the road, whilst in my carriage, when, to my joy, the solution occurred to me, and this was long after I had come to Down. The solution, as I believe, is that the modified offspring of all dominant and increasing forms tend to become adapted to many and highly diversified places in the economy of nature.

"Early in 1856 Lyell advised me to write out my views pretty fully, and I began at once to do so on a scale three or four times as extensive as that which was afterward followed in my 'Origin of Species'; yet it was only an abstract of the materials which I had collected, and I got through about half the work on this scale. But my plans were overthrown, for early in the Summer of 1858 Mr. Wallace, who was then in the Malay Archipelago, sent me an essay "On the Tendency of Varieties to Depart Indefinitely from the Original Type"; and this essay contained exactly the same theory as mine. Mr. Wallace expressed the wish that if I thought well of his essay, I should send it to Lyell for perusal.

"The circumstances under which I consented, at the request of Lyell and Hooker, to allow of an abstract from my MS., together with a letter to Asa Gray, dated September 5th, 1857, to be published at the same time with Wallace's Essay, are given in the 'Journal of the Proceedings of the Linnean Society,' 1858, p. 45. I was at first very unwilling to consent, as I thought Mr. Wallace might consider my doing so unjustifiable, for I did not then know how how generous and noble was his disposition. The extract from my MS. and the letter to Asa Gray had neither been intended for publication, and were badly written. Mr. Wallace's Essay, on the other hand, was admirably expressed and quite clear. Nevertheless, our joint productions excited very little attention, and the only published notice of them which I can remember was by Professor Haughton, of Dublin, whose verdict was that all that was new in them was false, and what was true was old. This shows how necessary it is that any new view should be explained at considerable length in order to arouse public attention.

"In September, 1858, I set to work, by the strong advice of Lyell and Hooker, to prepare a volume on the transmutation of species, but was often interrupted by ill-health. I abstracted the MS. begun on a much larger scale in 1856, and completed the volume on the same reduced scale. It cost me thirteen months and ten days' hard labor. It was published under the title of the 'Origin of Species,' in November, 1859. Though considerably added to and corrected in the later editions, it has remained substantially the same book.

"It is no doubt the chief work of my life. It was from the first highly successful. The first small edition of 1,250 copies was sold on the day of publication, and a second edition of 3,000 copies soon afterward. Sixteen thousand copies have now (1376) been sold in England; and, considering how stiff a book it is, this is a large sale. It has been translated into almost every European tongue, even into such languages as Spanish, Bohemian, Polish and Russian.

DARWIN'S STUDY.

On January 1st, 1860, I began arranging my notes for my work on the 'Variation of Animals and Plants under Domestication'; but it was not published until the beginning of 1868, the delay having been caused partly by frequent illnesses, one of which lasted seven months, and partly by being tempted to publish on other subjects which at the time interested me more.

"On May 15th, 1862, my little book on the 'Fertilization of Orchids,' which cost me ten months' work, was published. Most of the facts had been slowly accumulated during several previous years.

"During the same year I published in the 'Journal of the Linnean Society' a paper 'On the Two Forms, or Dimorphic Condition of Primula,' and during the next five years, five other papers on dimorphic and trimorphic plants. I do not think anything in my scientific life has given me so much satisfaction as making out the meaning of the structure of these plants.

"In the Autumn of 1864 I finished a long paper on 'Climbing Plants," and sent it to the Linnean Society. The writing of this paper cost me four months; but I

was so unwell when I received the proof-sheets that I was forced to leave them very badly and often obscurely expressed. The paper was little noticed, but when, in 1874, it was corrected and published as a separate book, it sold well. I was led to take up this subject by reading a short paper by Asa Gray, published in 1858.

"My 'Variation of Animals and Plants under Domestication' was begun, as already stated, in the beginning of 1860, but was not published until the beginning of 1868. It was a big book, and cost me four years and two months' hard labor. It gives all my observations and an immense number of facts collected from various sources, about our domestic productions.

"My 'Descent of Man' was published in February, 1871. As soon as I had become, in the year 1837 or 1838, convinced that species were mutable productions, I could not avoid the belief that man must come under the same law. Accordingly I collected notes on the subject for my own satisfaction, and not for a long time with any intention of publishing. Although in the 'Origin of Species' the derivation of any particular species is never discussed, yet I thought it best, in order that no honorable man should accuse me of concealing my views, to add that by the work 'light would be thrown on the origin of man and his history.' It would have been useless and injurious to the success of the book to have paraded, without giving any evidence, my conviction with respect to his origin.

"But when I found that many naturalists fully accepted the doctrine of the evolution of species, it seemed to me advisable to work up such notes as I possessed, and to publish a special treatise on the origin of man. I was the more glad to do so, as it gave me an opportunity of fully discussing sexual selection—a subject which had always greatly interested me. This subject, and that of the variation of our domestic productions, together with the causes and laws of variation, inheritance, and the intercrossing of plants, are the sole subjects which I have been able to write about in full, so as to use all the materials which I have collected.

"My book on the 'Expression of the Emotions in Men and Animals' was published in the Autumn of 1872. I had intended to give only a chapter on the subject in the 'Descent of Man,' but as soon as I began to put my notes together, I saw that it would require a separate treatise. My first child was born on December 27th, 1839, and I at once commenced to make notes on the first dawn of the various expressions which he exhibited, for I felt convinced, even at this early period, that the most complex and fine shades of expression must all have had a gradual and natural origin.

"In the Summer of 1860 I was idling and resting near Hartfield, where two species of Drosera abound; and I noticed that numerous insects had been entrapped by the leaves. I carried home some plants, and on giving them insects saw the movements of the tentacles, and this made me think it probable that the insects were caught for some special purpose. Fortunately a crucial test occurred to me, that of placing a large number of leaves in various nitrogenous and non-nitrogenous fluids of equal density; and as soon as I found that the former alone excited energetic movements, it was obvious that here was a fine new field for investigation.

"During subsequent years, whenever I had leisure, I pursued my experiments, and my book on 'Insectivorous Plants' was published in July, 1875—that is, sixteen years after my first observations. The delay in this case, as with all my other books, has been a great advantage to me.

"During this Autumn of 1876 I shall publish on the 'Effects of Cross and Self-Fertilization in the Vegetable Kingdom.' This book will form a complement to that on the 'Fertilization of Orchids,' in which I showed how perfect were the means for cross-fertilization, and here I shall show how important are the results.

"'The Effects of Cross and Self-Fertilization' was published in the Autumn of 1876; and the results there arrived at explain, as I believe, the endless and wonderful contrivances for the transportal of pollen from one plant to another of the same species. I now believe, however, chiefly from the observations of Hermann Müller, that I ought to have insisted more strongly than I did on the many adaptations for self-fertilization.

"In this same year 'The Different Forms of Flowers, etc.,' appeared, and in 1880 a second edition. This book consists chiefly of the several papers on heterostyled flowers originally published by the Linnean Society, corrected, with much new matter added, together with observations on some other cases in which the same plant bears two kinds of flowers.

"In 1879, I had a translation of Dr. Ernst Krause's 'Life of Erasmus Darwin' published, and I added a sketch of his character and habits from material in my possession.

"In 1880 I published, with (my son) Frank's assistance, our 'Power of Movement in Plants.' This was a tough piece of work. The book bears somewhat the same relation to my little book on 'Climbing Plants,' which 'Cross-Fertilization' did to the 'Fertilization of Orchids'; for in accordance with the principle of evolution it was impossible to account for climbing plants having been developed in so many widely different groups unless all kinds of plants possess some slight power of movement of an analogous kind. This I proved to be the case; and I was further led to a rather wide generalization, viz., that the great and important classes of movements, excited by light, the attraction of gravity, etc., are all modified forms of fundamental movement of circumnutation. It has always pleased me to exalt plants in the scale of organized beings; and I therefore felt an especial pleasure in showing how many and what admirably well-adapted movements the tip of a root possesses.

"I have now (May 1st, 1881,) sent to the printers the MS. of a little book on 'The Formation of Vegetable Mold, through the Action of Worms.' This is a subject of but small importance; and I know not whether it will interest any readers, but it has interested me.

"I have now mentioned all the books which I have published, and these have been the milestones in my life, so that little remains to be said. I am not conscious of any change in my mind during the last thirty years, excepting in one point presently to be mentioned; nor, indeed, could any change have been expected unless one of general deterioration. I think that I have become a little more skillful in guessing right explanations and in devising experimental tests, but this may probably be the result of mere practice, and of a larger store of knowledge. I have as much difficulty as ever in expressing myself clearly and concisely, and this difficulty has caused me a very great loss of time, but it has had the compensating advantage of forcing me to think long and intently about every sentence, and thus I have been led to see errors in reasoning and in my own observations or those of others.

"I have said that in one respect my mind has changed during the last twenty or thirty years. Up to the age of thirty, or beyond it, poetry of many kinds, such as the works of Milton, Gray, Byron, Wordsworth, Coleridge

and Shelley, gave me great pleasure, and, even as a schoolboy, I took intense delight in Shakespeare, especially in the historical plays. I have also said that formerly pictures gave me considerable, and music great delight. But now for many years I cannot endure to read a line of poetry ; I have tried lately to read Shakespeare, and found it so intolerably dull that it nauseated me. I have, also, almost lost my taste for pictures or music. Music generally sets me thinking too energetically on what I have been at work on, instead of giving me pleasure. I retain some taste for fine scenery, but it does not cause me the exquisite delight which it formerly did. On the other hand, novels, which are works of the imagination, though not of a very high order, have been for years a wonderful relief and pleasure to me, and I often bless all novelists. A surprising number have been read aloud to me, and I like all if moderately good, and if they do not end unhappily—against which a law ought to be passed. A novel, according to my taste, does not come into the first class unless it contains some person whom one can thoroughly love, and if a pretty woman, all the better.

"This curious and lamentable loss of the higher æsthetic tastes is all the odder, as books on history, biographies, and travels (independently of any scientific facts which they may contain), and essays on all sorts of subjects, interest me as much as ever they did. My mind seems to have become a kind of machine for grinding general laws out of large collections of facts, but why this should have caused the atrophy of that part of the brain alone on which the higher tastes depend, I cannot conceive. A man with a mind more highly organized or better constituted than mine would not, I suppose, have thus suffered ; and if I had to live my life again, I would have made a rule to read some poetry and listen to some music at least once every week ; for, perhaps, the parts of my brain now atrophied would thus have been kept active through use. The loss of these tastes is a loss of happiness, and may possibly be injurious to the intellect, and more probably to the moral character, by enfeebling the emotional part of our nature.

"My habits are methodical, and this has been of not a little use for my particular line of work. Lastly, I have had ample leisure from not having to earn my own bread. Even ill-health, though it has annihilated several years of my life, has saved me from the distractions of society and amusement.

"Therefore my success as a man of science, whatever this may have amounted to, has been determined, as far as I can judge, by complex and diversified mental qualities and conditions. Of these, the most important have been : the love of science, unbounded patience in long reflecting over any subject, industry in observing and collecting facts, and a fair share of invention as well as of common sense. With such moderate abilities as I possess, it is truly surprising that I should have influenced to a considerable extent the belief of scientific men on some important points."

Darwin's religious views are a matter of exceptional interest, and undoubtedly have been much misapprehended. He was, as we have seen, educated for the Church of England ; and he gave up his orthodoxy with great reluctance. In a letter, written in 1879, he says : "I may state that my judgment often fluctuates. . . In my most extreme fluctuations I have never been an atheist in the sense of denying the existence of God. I think that generally (and more and more as I grow older), but not always, an agnostic would be the more correct description of my state of mind." The law of natural selection seemed to him to destroy the old argument from design in nature, on which Paley so largely relies. He did not think the universe the result of chance, but the proof of its creation by an intelligent mind seemed to him incomplete. He recognized the instinctive belief of mankind in the existence of such a being, but says, sadly: "With me the horrid doubt always arises whether the convictions of man's mind, which have been developed from the minds of the lower animals, are of any value or at all trustworthy." His final conclusion respecting the existence of God and the immortality of the soul was undoubtedly expressed in a letter to a Dutch student, written in 1876 : "The whole subject is beyond the scope of man's intellect, but man can do his duty."

And that Darwin did his duty, as he saw it, with perfect fidelity and frankness, who can deny? He gave his life to science. He was a wise and affectionate husband and father, and a cordially respected neighbor to the simple townspeople with whom he lived during forty years. His life was simple and blameless ; his personal example was invariably genial, patient, generous and kind.

Darwin's life at Down was that of a kind of genial recluse, a martyr to ill-health, yet ever cheerful and industrious. "He was an early riser," writes his son, Francis Darwin. "After breakfasting alone about 7:45, he went to work at once, considering the one and one-half hour between 8 and 9:30 one of his best working times. At 9:30 he came into the drawing-room for his letters—rejoicing if the post was a light one, and being sometimes much worried if it was not. He would then hear any family letters read aloud as he lay on the sofa.

"The reading aloud, which also included part of a novel, lasted till about half past ten, when he went back to work till twelve or a quarter past. By this time he considered his day's work over, and would often say, in a satisfied voice, '*I've* done a good day's work.' He then went out of doors whether it was wet or fine ; Polly, his white terrier, went with him in fair weather, but in rain she refused, or might be seen hesitating in the veranda, with a mixed expression of disgust and shame at her own want of courage.

"My father's midday walk generally began by a call at the greenhouse, where he looked at any germinating seeds or experimental plants which required a casual examination, but he scarcely ever did any serious observing at this time. Then he went on for his constitutional —either round the 'Sand-walk,' or outside his own grounds in the immediate neighborhood of the house. The 'Sand-walk' was a narrow strip of land one and one-half acres in extent, with a gravel walk round it. On one side of it was a broad old shaw with fair-sized oaks in it, which made a sheltered, shady walk ; the other side was separated from a neighboring grass field by a low, quick-set hedge, over which you could look at what view there was, a quiet little valley losing itself in the upland country toward the edge of the Westerham hill, with hazel coppice and larch wood, the remnants of what was once a large wood, stretching away to the Westerham road. I have heard my father say that the charm of this simple little valley helped to make him settle at Down.

"When letters were finished, about three in the afternoon, he rested in his bedroom, lying on the sofa and smoking a cigarette, and listening to a novel or other book not scientific. He only smoked when resting, whereas snuff was a stimulant, and was taken during working hours.

"It was a sure sign that he was not well when he was idle at any times other than his regular resting-hours ; for, as long as he remained moderately well, there was no

break in the regularity of his life. Weekdays and Sundays passed by alike, each with their stated intervals of work and rest. It is almost impossible, except for those who watched his daily life, to realize how essential to his well-being was this regular routine."

He was practically debarred from the social intercourse which he enjoyed with such zest; yet he was personally acquainted not only with most of his great scientific contemporaries, but also with many literary and other celebrities. Very amusing and characteristic is his mention of Carlyle, "seen by me several times at my brother's house, and two or three times at my own house. His talk was very racy and interesting, just like his writings, but he sometimes went on too long on the same subject. I remember a funny dinner at my brother's, where, amongst a few others, were Babbage and Lyell, both of whom liked to talk. Carlyle, however, silenced every one by haranguing during the whole dinner on the advantages of silence. After dinner, Babbage, in his grimmest manner, thanked Carlyle for his very interesting lecture on silence."

During the last ten years of his life, Darwin's health showed signs of amendment, rather than of increasing decline. In the latter part of 1881, however, he began to fail. During February and March, 1882, attacks of pain in the region of the heart, with irregularity of the pulse, became frequent. A seizure of this sort occurred about March 7th, when he was walking alone at a short distance from the house; he got home with difficulty, and this was the last time that he was able to reach his favorite "Sand-walk." He suffered from distressing sensations of exhaustion and faintness, and seemed to recognize with deep depression the fact that his working days were over. He gradually recovered from this condition, and became more cheerful and hopeful, as is shown in the following letter to Mr. Huxley, who was anxious that he should have closer medical supervision than the existing arrangements allowed:

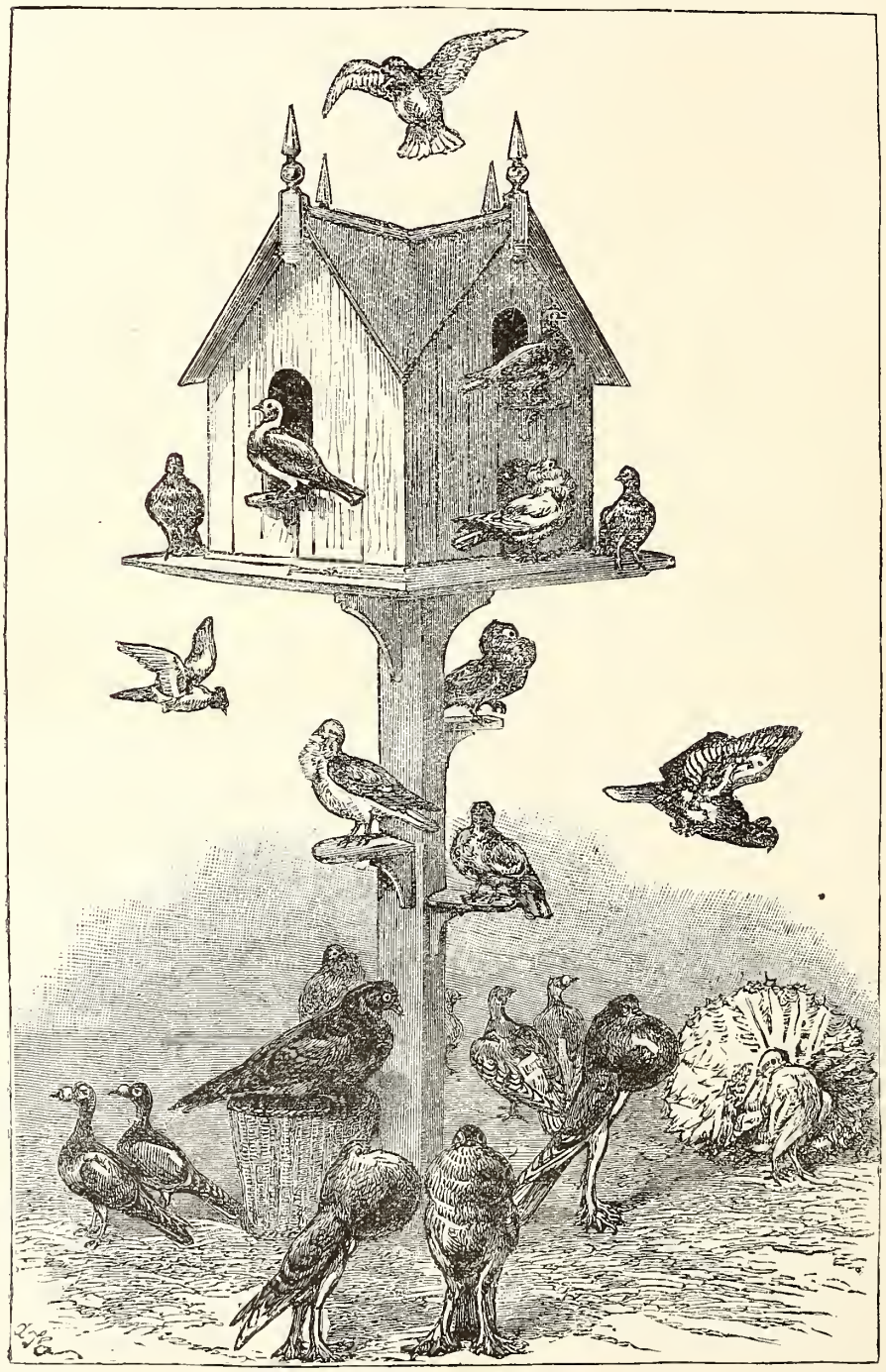
"DOWN, *March 27th*, 1882.

"MY DEAR HUXLEY: Your most kind letter has been a real cordial to me. I have felt better to-day than for three weeks, and have felt as yet no pain. Your plan seems an excellent one, and I will probably act upon it, unless I get very much better. Dr. Clark's kindness is unbounded to me, but he is too busy to come here. Once again, accept my cordial thanks, my dear old friend. I wish to God there were more automata* in the world like you.

"Ever yours,

"CHARLES DARWIN."

During the night of April 18th, he had a severe attack and passed into a faint, from which he was brought back to consciousness with great difficulty. He seemed to recognize the approach of death, and said: "I am not the least afraid to die." The next day, April 19th, 1882, the end came.



DARWIN'S THEORY ILLUSTRATED BY PIGEONS.

* The allusion is to Mr. Huxley's address "On the Hypothesis that Animals are Automata, and its History," given at the Belfast meeting of the British Association in 1874, and republished in *Science and Culture*.